APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

	Application No.	Applicant(s)
Office Action Summary	09/578,290	CAREY, JAMES E
	Examiner	**Art Unit**	
	Lilian Vo	2195	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on *10 September 2007*.

2a) ☒ This action is **FINAL**.   2b) ☐ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *1 – 4, 6 – 13, 15 – 22, 24 – 31 and 33 - 44* is/are pending in the application.

　　4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) *1 – 4, 6 – 13, 15 – 22, 24 – 31 and 33 - 44* is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.

　　Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

　　Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

　　a) ☐ All   b) ☐ Some * c) ☐ None of:

　　　1. ☐ Certified copies of the priority documents have been received.

　　　2. ☐ Certified copies of the priority documents have been received in Application No. _____.

　　　3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

　　* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
　　Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
　　Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1.   Claims 1 – 4, 6 – 13, 15 – 22, 24 – 31 and 33 - 44 are pending. Claims 5, 14, 23 and 32

have been cancelled.

Claim Rejections - 35 USC § 102

2.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed
> in the United States before the invention by the applicant for patent or (2) a patent granted on an application for
> patent by another filed in the United States before the invention by the applicant for patent, except that an
> international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this
> subsection of an application filed in the United States only if the international application designated the United
> States and was published under Article 21(2) of such treaty in the English language.

3.   Claim 6 is rejected under 35 U.S.C. 102(e) as being anticipated by Achenson et al. (US

6,477,586).

4.   Regarding **claim 6**, Achenson discloses in a multithreaded computing environment, a

method of processing computing tasks (abstract), comprising:

        defining a plurality of worker threads, each thread capable of processing a task (abstract,

col. 2 lines 16 - 19);

        defining a plurality of task queues, each task queue capable of queuing a plurality of tasks

(abstract, col. 2 lines 20 - 23);

        associating each task queue with a single respective worker thread (abstract, col. 2 line

21);

assigning a task to an assigned task queue (col. 5, lines 55 – 64); and

in a worker thread not associated with the assigned task queue, processing the task (col. 5

lines 42 – 45, 60 – 63 and col. 6 lines 64 – col. 7 lines 9).

Claim Rejections - 35 USC § 103

5.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
> manner in which the invention was made.

6.   Claims 1, 4, 7, 10, 13, 15 - 16, 19, 22, 24 - 25, 28, 31, 33, 36, 39 and 40 are rejected

under 35 U.S.C. 103(a) as being unpatentable over Achenson et al. (US 6,477,586, hereinafter

Achenson), as applied to claim 6 above, in view of Sullivan (US Pat. 5,438,680).

7.   Regarding **claim 1**, Achenson discloses in a multithreaded computing environment, a

method of processing computing tasks (abstract), comprising:

defining a plurality of worker threads, each thread capable of processing a task (abstract,

col. 2 lines 16 - 19);

defining a plurality of task queues, each task queue capable of queuing a plurality of tasks

(abstract, col. 2 lines 20 - 23);

associating each task queue with a respective worker thread (abstract, col. 2 line 21); and

from a worker thread, processing a task from a task queue not associated with the thread (col. 5 lines 42 – 45, 60 – 63 and col. 6 lines 64 – col. 7 lines 9).

Achenson discloses of placing tasks in task queue (col. 5, lines 55 – 64) but did not clearly teach the process of assigning a task to a task queue in an essentially random fashion. This feature can be found in Sullivan in which tasks are simply assigned to processors in a generally random fashion (col. 6, lines 35 – 61). It is obvious for one of ordinary skill in the art, at the time the invention was made to incorporate this feature to Achenson to optimize system performance with task assignment.

8.   Regarding **claim 4**, as modified Achenson discloses the method of claim 1 further comprising, from a worker thread, processing a task from the associated task queue (Achenson: col. 5 lines 55 – 59, col. 6 lines 53 – 54).

9.   Regarding **claim 7**, Achenson discloses of placing tasks in task queue (col. 5, lines 55 – 64) but did not clearly teach the process of selecting an assigned task queue in an essentially random fashion. Nevertheless, this feature can be found in Sullivan in which tasks are simply assigned to processors in a generally random fashion (col. 6, lines 35 – 61). It is obvious for one of ordinary skill in the art, at the time the invention was made to incorporate this feature to Achenson to optimize system performance with task assignment.

10.   **Claims 10, 13, 15 - 16, 19, 22, 24 - 25, 28, 31, 33, 36, 39 and 40** are rejected on the same ground as stated in claims 1 and 4 above.

11.   Claims 2, 3, 8, 9, 11, 12, 17, 18, 20, 21, 26, 27, 29, 30, 34 and 35 are rejected under 35

U.S.C. 103(a) as being unpatentable over Achenson et al. (US 6,477,586) in view of Sullivan

(US Pat. 5,438,680) as applied to claims 1, 6, 10, 15, 19, 24, 28 and 33 above, and further in

view of Najork et al. (US Pat. 6,377,984, hereinafter Najork).

12.   Regarding **claims 2 and 3**, as modified Achenson did not clearly specify the steps of

assigning a task comprising selecting an empty task queue and determining whether the selected

task queue is in a busy state. Nevertheless, these teaching steps are disclosed in Najork's

invention (col. 3, lines 22 – 33). It would have been obvious for one of ordinary skill in the art,

at the time the invention was made include Najork's teaching with modified Achenson to better

load balancing the tasks by utilizing all of the empty queues while not overloading other busy

queues in the system.

13.   Claims 8, 9, 11, 12, 17, 18, 20, 21, 26, 27, 29, 30, 34 and 35 are rejected on the same

ground as stated in claims 2 and 3 above.

14.   Claims 37, 38 and 41 – 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Achenson et al. (US 6,477,586) in view of Sullivan (US Pat. 5,438,680) and further in view of

Brenner et al. (US Pat. Application Publication 2003/0225815, hereinafter Brenner).

15.   Regarding **claim 37**, Achenson discloses in a multithreaded computing environment, a

method of processing computing tasks (abstract), comprising:

defining a plurality of worker threads, each thread capable of processing a task (abstract,

col. 2 lines 16 - 19);

defining a plurality of task queues, each task queue capable of queuing a plurality of tasks

(col. 2 lines 20 - 23);

associating each task queue with a respective worker thread (col. 2 line 20);

from a worker thread, processing a task from the associated task queue (col. 5 lines 55 –

59, col. 6 lines 53 – 54).

Achenson discloses of placing tasks in task queue (col. 5, lines 55 – 64) but did not

clearly teach the additional limitations such as the process of:

assigning a task to a task queue in an essentially random fashion using a random number

generator to identify a task queue; and

searching for an empty task queue to store the task if it is determined that the initial task

queue is not empty.

Sullivan teaches the concept in which tasks are simply assigned to processors queue in a

generally random fashion (col. 6, lines 35 – 61). It is obvious for one of ordinary skill in the art,

at the time the invention was made to recognize Sullivan's system inherently use a random

generator to randomly select which processor queue for assigning the tasks.

Brenner teaches the concept of placing new thread/process in a run queue associated with

an idle processor by searching/scanning through all the nodes (page 3, paragraph 0043, page 6

paragraph 95 and fig. 8: 840 - 860). According Brenner, every processor has a local task queue.

When a processor is considered an idle processor it is because its task queue is empty (fig. 2: 292 and page 3 paragraph 45). It would have been obvious to an ordinary of skill in the art to recognize that when Brenner search through and/or scan the nodes, he inherently teaches the step of determining whether a processor task queue is empty or not in order for him to determine the processor is idle (not busy). Therefore, it would have been obvious for one of an ordinary skill in the art to incorporate Sullivan's teaching to Achenson to optimize system performance with task assignment in a random fashion (Sullivan: col. 6, lines 55 – 61). It is also obvious for one of an ordinary skill in the art, at the time the invention was made to apply Brenner's concept in assigning processes to an empty run queue to Achenson's system so that optimal performance can be achieved with balancing processes among the system run queues.

16.   Regarding **claim 42**, Achenson discloses the processing comprises from a worker thread, processing a task from a task queue not associated with the thread (col. 5 lines 42 – 45, 60 – 63 and col. 6 lines 64 – col. 7 lines 9).

17.   Claims 38, 41, 43 and 44 are rejected on the same ground as stated in claims 37 and 42 above.

Response to Arguments

18.   Applicant's arguments filed 9/10/07 have been fully considered but they are not persuasive for the reasons set forth below.

19.   Applicant argues that Achenson does not does not teach or suggest the limitation "from a worker thread, processing a task from a task queue not associated with the thread" (page 11 – page 13), the examiner disagrees. Achenson discloses that every process including process 3 has a pool of worker thread within the process (col. 5 lines 42 – 44). Thus, when a message is transfer to process 3 from process 2A as states in col. 5 lines 60 – 63 and col. 6 line 64 – col. 7 line 9, this clearly teaches and/or suggests/indicates that a worker thread within process 3 is processing the message/task from a queue of process 2A. Therefore, Achenson explicitly teach that a worker thread is processing a message/task from a task queue associated with process 2A and not process 3.

        With respect to applicant's remark that "the examiner herself is arguing... that Achenson et al. does not disclose the limitation...but rather suggests it" (page 11 last paragraph), the examiner disagrees. The examiner's previous response inadvertently use the words suggest and/or indicate which might be confusion about examiner's position and applicant appears to interpret that Achenson does not disclose the limitation. However, as stated above, Achenson explicitly teaches the limitation from a worker thread, processing a task from a task queue not associated with the thread when a message that was previously queued in a queue of process 2A is transfer to be processed by process 3 as states in col. 5 lines 60 – 63 and col. 6 line 64 – col. 7 line 9. This clearly teaches that a worker thread within process 3 is processing the message/task that was previously queued from a queue of process 2A. Therefore, the examiner disagrees with applicant's interpretation and maintains that the rejection is proper.

        With respect to applicant's remark in which "applicant respectfully fails to see how the examiner arrives at this conclusion based on the cited text..." (page 13, paragraph 2), applicant to

note that the examiner has interpreted the claim language as broadly as possible. In this case, as

stated above, a worker thread within process 3 is processing the message/task that was

previously queued in the queue of process 2A. In other words, the message/task is previously

from the queue of process 2A and a task from process 2A queue is not associated with the

worker thread of process 3. Therefore, the reference teaches the limitation from a worker thread,

processing a task from a task queue not associated with the thread consistent with the

requirement of MPEP 2111.

Regarding applicant's remark that Achenson does not teach and/or imply that the

message is remaining in a queue of process 2A (page 13 paragraph 2), this is not required by the

claim. Again, the examiner has interpreted the claim language as broadly as possible. It is also

the examiner's position that applicant has not yet submitted claims drawn to limitations which

define the method and system of applicant's disclosed invention in a manner that distinguishes

over the prior art. Failure for applicant to significantly narrow definition/scope of the claims

implies the applicant intends broad interpretation be given to the claims. The examiner thus

maintains the previous rejections.

20.   Applicant argues that Najork fails to teach or suggest selecting comprises determining

whether a selected task queue is in a busy state or making any kind of determination of whether a

selected empty queue is in a busy state as recited in claim 3 (page 15 paragraph 2 – page 16

paragraph 2), the examiner disagree. When Najork teaches of identifying an empty task queue,

it means that the identified queue has been determined that it is not in a busy. If a queue is in the

busy state, it would not be identified and/or considered as an empty queue. A queue must have

been determined whether it is in a busy state or not in order to be considered as an empty queue

or a busy queue. Therefore, Najork inherently teaches the concept of determining whether the

queue is in a busy state or not.

With respect to applicant's remark that Najork does not teach and/or suggest selecting an

empty task queue (page 15 paragraph 3), the examiner disagrees. He clearly discloses when an

empty queue is identified, then a different host may be assigned to it (col. 3 lines 22 – 30). An

empty queue must have been identified and then selected in order to perform the assignment

step. Therefore, Najork inherently teach the step of selecting an empty task queue.

21.   Applicant argues that Brenner does not teach or suggest of determining that the initial

task queue is not empty as recited in claim 37 (page 16 last paragraph – page 17), the examiner

disagrees. Brenner teaches the concept of placing new thread/process in a run queue associated

with an idle processor by searching/scanning through all the nodes (page 3, paragraph 0043, page

6 paragraph 95 and fig. 8: 840 - 860). According Brenner, every processor has a local task

queue. When a processor is considered an idle processor it is because its task queue is empty

(fig. 2: 292 and page 3 paragraph 45). It would have been obvious to an ordinary of skill in the

art to recognize that when Brenner search through and/or scan the nodes, he inherently teaches

the step of determining whether a processor task queue is empty or not in order for him to

determine the processor is idle (not busy).

With respect to applicant's remark that Brenner offers no details as to the particulars of

the round-robin search (page 17 paragraph 4), the examiner disagrees. Brenner clearly discloses

the details of the round robin search on page 45 paragraph 45 and in fig. 2. Applicant's argues

that Brenner does not suggest or even imply how the search is actually performed, examiner

submits that the limitation as recited in the claim does not require the limitation to read on

anything more than just searching for another empty queue to assign a task if the current queue is

busy. In this case, Brenner place a thread in queue 292 (empty queue) because the initial queue

291 is not empty (busy) (fig. 2). As stated in paragraph 45, when a new thread is created, the

round-robin search for an idle cpu will star with cpu 250 and local run queue 293 and will

progress through each of the cpus 260 – 240 and local run queues 294 – 292 of nodes 220, 224

and 225 until an idle cpu is encountered or each cpu/local run queue has been reached.

Conclusion

22.   Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is

reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

MONTHS of the mailing date of this final action and the advisory action is not mailed until after

the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the date of this

final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lilian Vo whose telephone number is 571-272-3774. The examiner can normally be reached on Thursday 8am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng-Ai An can be reached on 571-272-3756. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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November 20, 2007

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